



## INTRODUCTION

In 1982, the Carroll Soil and Water Conservation District (SWCD), in cooperation with the USDA, Soil Conservation Service (SCS) took part in the National Resources Inventory (NRI). Information was collected on over 200 sample units to provide county reliable resource data.

This inventory provided natural resource data on (1) land use, (2) conservation treatment needs, (3) prime farmland, (4) potential cropland, (5) sheet and rill erosion, (6) flood prone areas, (7) wetlands, and (8) small bodies of water.

The study identifies erosion and land management problems in Carroll County. These problems were addressed and priorities set in the District's long-range program. Top priorities include:

1. Assist in establishing best management practices, such as conservation cropping systems, conservation tillage, contour strips, animal waste management systems, and pasture/hayland management to effectively reduce soil erosion on cropland and pastureland.
2. Assist with establishing practices such as timber stand improvement, tree planting, livestock exclusion, access and logging roads which will minimize soil loss on forest land.
3. Provide soils information in relation to soil suitability and limitations for various land use choices.
4. Provide mining operators and gas-oil drilling companies with information to prevent erosion and sediment problems caused during or following their operations.

This publication distributes the results of the Carroll County Resources Inventory. The publication describes the soil resource base and highlights some problems that could reduce future soil productivity. Along with reduced production, off site damages could be expected. A primary objective of the Carroll SWCD is to promote the wise use of the soil resource base in Carroll County.

The information in this publication, like all information developed from a statistical study, has varying degrees of reliability or confidence levels. All values expressed here, representing over 10 percent of the county area, have a confidence level greater than 90 percent or they are at least 90 percent accurate. Smaller values, those representing less than 10 percent of the total county area, will be less than 90 percent accurate.

## Land Use

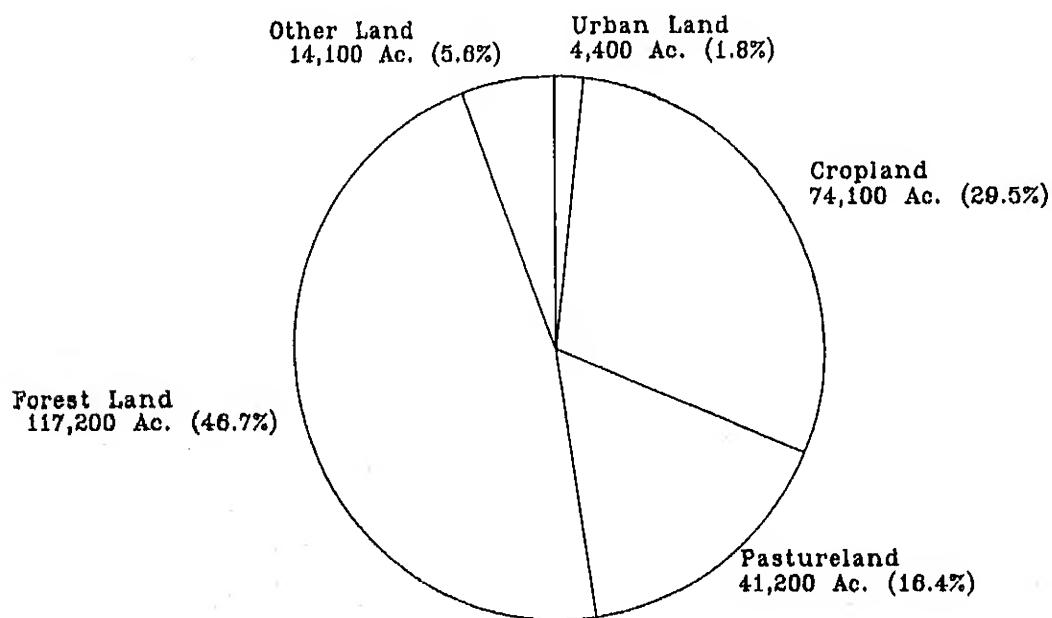
Land area measurements were made for Carroll County during the 1980 Census by the U.S. Department of Commerce.

Table 1. Carroll County Area Measurements

Nonfederal Land and Small Bodies of Water	251,000 Acres
Federal Land	300 Acres
Census Water (Large Bodies of Water)	3,600 Acres
Total Surface Area	254,900 Acres

This report addresses only nonfederal land.

Figure 1. Carroll County Land Use



TOTAL NONFEDERAL ACREAGE IN CARROLL COUNTY = 251,000 ACRES

### KEY POINT:

- o Forest land is the largest land use in the county.

## Land Use by Capability Class

Soils can be classified in a number of ways. SCS uses a land capability classification system that groups soils on the basis of their ability to produce common cultivated crops and pasture plants without deterioration. Land capability classes and subclasses in Carroll County are based on the soil survey.

Capability classes are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of agricultural use.

Class III soils have severe limitations that reduce the choice of agricultural use.

Class IV soils have very severe limitations that reduce the choice of plants, or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Each capability class except Class I has subclasses to identify specific limitations. The letter "e" stands for erosion risk; "w" for wetness; and "s" for soils limited mainly because they are shallow, droughty, or stony.

Table 2. Rural Nonfederal Land Use Acreage by Capability Class

CLASS	CROPLAND Acres	PASTURELAND Acres	FOREST LAND Acres	OTHER LAND Rural Acres	TOTAL
I	0	400	0	0	400
II	25,300	7,800	9,500	1,100	43,700
III	32,400	15,800	23,000	2,000	73,200
IV	13,900	13,100	45,000	600	72,600
V	0	400	1,200	0	1,600
VI	2,100	3,300	32,400	1,200	39,000
VII	400	400	6,100	0	6,900
NA	0	0	0	2,800	2,800
TOTAL	74,100	41,200	117,200	7,700	240,200

KEY POINTS:

- o Ninety-seven percent of all cropland is on Classes II, III, and IV.
- o Seventy-eight percent of all cropland is on Classes II and III.
- o Eighty-four percent of Classes VI and VII is in forest land.

Table 3. Cropland Use Acreage by Capability Class

CLASS	CULTIVATED CROPLAND			TOTAL
	HORTICULTURE	HAYLAND	-----Acres-----	
IIe	13,700	400	6,300	20,400
IIw	4,100	0	400	4,500
IIIs	400	0	0	400
IIIe	19,200	400	10,300	29,900
IIIw	500	0	800	1,300
IIIs	800	0	400	1,200
IVe	6,900	0	7,000	13,900
VIE	900	0	400	1,300
VIIs	0	0	800	800
VIIe	0	0	400	400
TOTAL	46,500	800	26,800	74,100

KEY POINTS:

- o Sixty-three percent of all cropland is cultivated cropland.
- o Eighty-three percent of all cultivated cropland is on Classes II and III.
- o Eighty-eight percent of all hayland is on Classes IIe, IIIe, and IVe.

### Prime Farmland

Prime farmland is one of several kinds of important farmlands defined by the U.S. Department of Agriculture. It is of major importance in providing the Nation's short and long range needs for food and fiber. Prime farmland soils are defined as the soils that are best suited to producing food, fiber, forage, feed, and oilseed crops. Such soils have properties that are favorable for the economic production of sustained high yields of crops. Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland is also the easiest and least costly to develop for non-agricultural uses. Urbanization and other land uses have the potential to consume significant areas of prime farmland. Decisions need to be made at the local level to encourage wise use of agricultural lands.

Carroll County has about 37,800 acres of prime farmland with all of it in Capability Classes I, II, and III.

Table 4. Prime Farmland by Rural Nonfederal Land Use

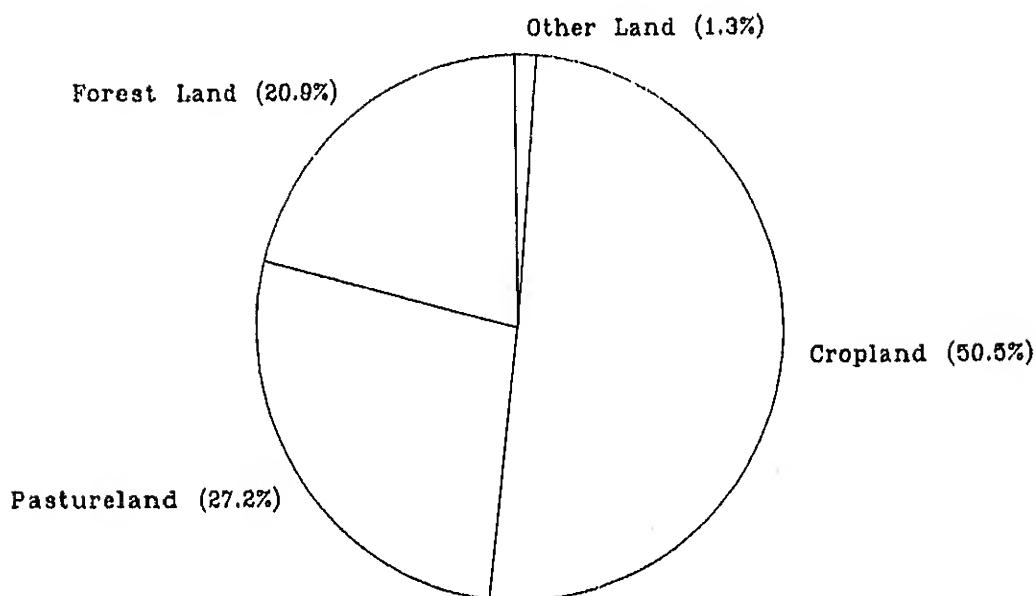
LAND USE	TOTAL ACRES	PRIME FARMLAND	
		Acres	Percent
Cropland	74,100	19,100	26
Pastureland	41,200	10,300	25
Forest Land	117,200	7,900	7
Other Land	7,700	500	6
TOTAL	240,200	37,800	16

Half of the prime farmland in the county is currently cropland. Figure 2 illustrates the uses of prime farmland.

Figure 2.

## Use Of Prime Farmland

Carroll County

Soil Erosion

Soil erosion is a continuously occurring natural process that loosens and transports soil particles. Erosion occurs slowly on undisturbed forest land and areas with adequate permanent vegetative cover. Soil losses are quite high on sloping cropland that is continually cultivated and left unprotected during several months every year.

More than 564 thousand tons of topsoil erode on Carroll County agricultural land annually. More than 61 percent of the erosion is on cropland.

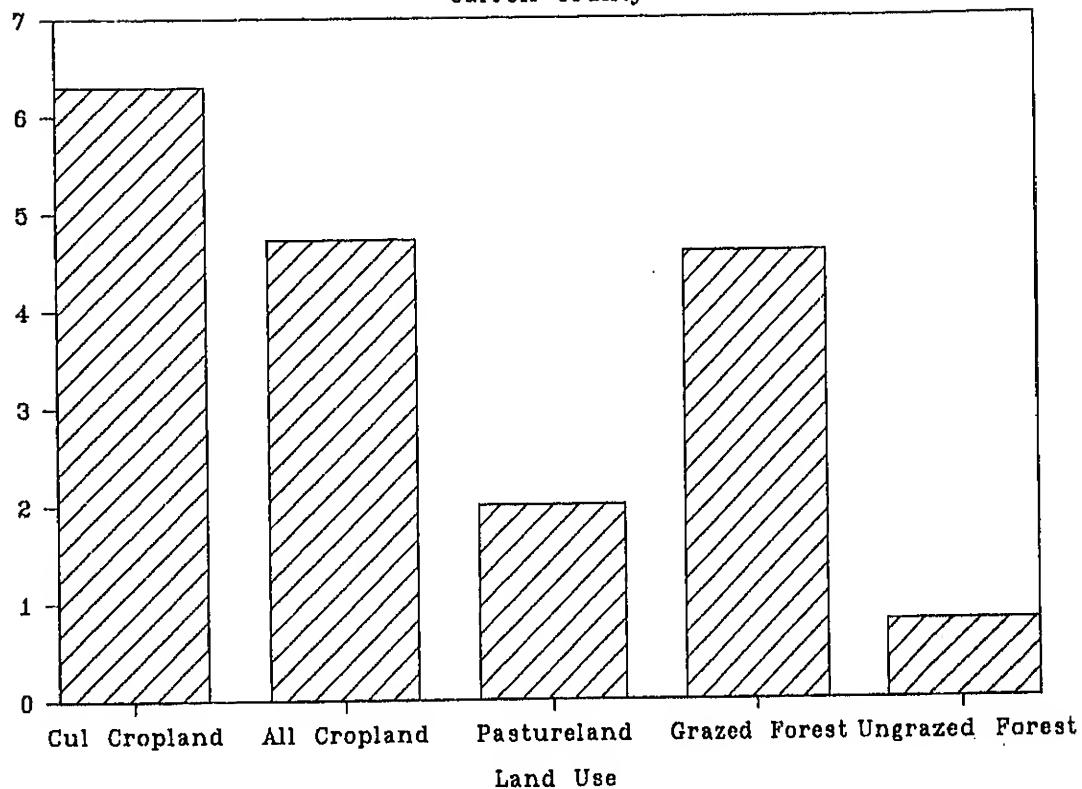
Table 5. Annual Soil Erosion by Agricultural Land Use on Nonfederal Land

LAND USE	ACRES	TONS	TONS/ACRE
Cropland	74,100	347,600	4.7
Pastureland	41,200	84,000	2.0
Grazed Forest Land	10,400	48,300	4.6
Ungrazed Forest Land	106,800	84,700	0.8
<b>TOTAL</b>	<b>232,500</b>	<b>564,600</b>	
<b>AVERAGE</b>			<b>2.4</b>

Figure 3.

### Erosion Rate By Landuse Carroll County

Erosion Rate T./Ac./Yr.



#### KEY POINTS:

- o Grazed forest land has a high erosion rate of almost five tons per acre per year.
- o The average erosion rate for cultivated cropland is more than six tons per acre per year in Carroll County.

Table 7. Nonfederal Cropland in Relation to "T"  
by Capability Class and Subclass

CAPABILITY CLASS	TOTAL	LESS THAN "T"	"T" - "2T"	GREATER THAN "2T"
-----ACRES-----				
IIe	20,400	18,400	1,200	800
IIw	4,500	4,100	400	0
IIIs	400	0	0	400
IIIe	29,900	16,800	5,700	7,400
IIIf	1,300	1,300	0	0
IIIs	1,200	1,200	0	0
IVe	13,900	6,500	2,900	4,500
VIf	1,300	400	400	500
VIIs	800	800	0	0
VIIe	400	0	0	400
TOTAL	74,100	49,500	10,600	14,000

KEY POINTS:

- o Thirty-three percent of all cropland is eroding over "T".
- o Nineteen percent of all cropland is eroding over "2T".

### Conservation Treatment Needs

Many acres of Carroll County agricultural land need one or more different types of conservation treatment to either protect or improve soil and water resources. The different conservation practices used to accomplish these objectives vary by land use.

Cropland treatment usually involves practices like conservation cropping systems, conservation tillage, contour farming, contour strip cropping, terraces and subsurface drainage systems. Pastureland practices include rotational grazing, pasture management and pasture planting. These practices may be used to protect or improve soil, water and plant resources. Conservation practices needed on forest land may include livestock exclusion, timber stand improvement and tree planting. Land designated as adequately protected is properly managed for production and protected from excessive erosion.

Table 8. Conservation Treatment Needs and Percent by Land Use on Nonfederal Land

LAND USE	TOTAL ACRES	TOTAL ACRES NEEDING TREATMENT	% TOTAL ACRES NEEDING TREATMENT
Cropland	74,100	30,700	41
Pastureland	41,200	30,000	73
Forest Land	117,200	106,500	91
Other Land	7,700	1,800	23
TOTAL	240,200	169,000	70

### KEY POINTS:

- o Forty-one percent of all cropland is in need of conservation treatment.
- o Seventy-three percent of all pastureland is in need of conservation treatment.
- o Ninety-one percent of all forest land is in need of conservation treatment.

## SUMMARY

Agriculture accounts for more than 90 percent of Carroll County land use. Thirty percent of the county is cropland. About 16 percent of Carroll County is prime farmland and half of the prime farmland is cropland.

Serious erosion problems exist on cropland and grazed forest land. Thirty-three percent of all cropland is losing soil at excessive rates. Productivity will be reduced if erosion is allowed to continue at these high rates.

Conservation treatment is needed to conserve the resource base or increase productivity on 70 percent of all agricultural land.

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